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0012759

December 17, 1990

Meeting Minutes Transmittal/Approval
Unit Managers Meeting: 100-HR-1/HR-3/DR-1 Operable Unit
450 Hills Street, Room 47, Richland, Washington

Meeting Held November 15, 1990

From/
Appvl.: K. Michael Thompson SG Date: 12/19/90
James D. Goodenough, 100-HR-1/DR-1 Unit Manager, DOE-RL (A5-19)

Appvl.: K. Michael Thompson Date: 12/19/90
K. Michael Thompson, 100-HR-3 Unit Manager, DOE-RL (A5-19)

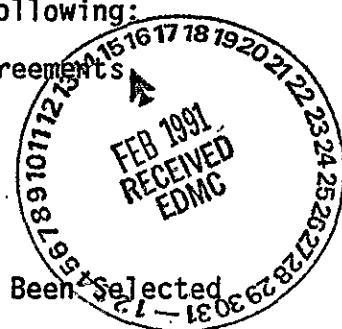
Appvl.: Larry Goldstein Date: 12/23/90
Larry Goldstein, 100-HR-1 Unit Manager, WA Department of Ecology

Appvl.: Charles S. Cline Date: 12/19/90
Charles S. Cline, 100-HR-3/DR-1 Unit Manager, WA Department of Ecology

Appvl.: Douglas R. Sherwood Date: 12/19/90
Douglas R. Sherwood, 100-HR-1/HR-3/DR-1 Unit Manager, EPA (B5-01)

Meeting Minutes are attached. Minutes are comprised of the following:

- Attachment #1 - Meeting Summary/Summary of Commitments and Agreements
Attachment #2 - Attendance List
Attachment #3 - Agenda
Attachment #4 - Commitments/Agreements Status List
Attachment #5 - 100-HR-1/HR-3/DR-1 Schedule of RI Activities
Attachment #6 - Expansion Box Detail
Attachment #7 - 100-HR-3 Operable Unit Map
Attachment #8 - Wells Within 100-HR-3 Operable Unit That Have Been Selected for Possible Use
Attachment #9 - Summary of Groundwater Monitoring Results From the 100-H Reactor Area



Prepared by: Don Fissett Date: 12/19/90
SWEC Support Services

Concurrence by: Jill M. Day Date: 24 Jan 91
WHC HR-1 RI Coordinator

Concurrence by: Alan D. Krey Date: 1/24/91
WHC HR-3 RI Coordinator

Concurrence by: Asking for Nachumbaline Date: 1/24/91
WHC DR-1 RI Coordinator

100-HR-1/HR-3/DR-1 Unit Managers Meeting
November 15, 1990

Distribution:

Donna Lacombe, PRC	Ronald D. Izatt (A6-95)
Ward Staubitz, USGS	Director, DOE-RL, ERD
Diane Clark, DOE (A5-55)	Ronald E. Gerton (A6-80)
Doug Fassett, SWEC (A4-35)	Director, DOE-RL
Mary Harmon, DOE-HQ (EM-442)	Roger D. Freeberg (A6-95)
KaeRae Parnell, WHC (H4-18)	Chief, Rstr. Br., DOE-RL/ERD
Tom Wintczak, WHC (B2-15)	Steven H. Wisness
Mel Adams, WHC (H4-55)	Tri-Party Agreement, Prog. Mgr.
Merl Lauterbach, WHC (H4-55)	Richard D. Wojtasek (B2-15)
Fred Roeck, WHC (H4-55)	Prgm. Mgr. WHC
Steve Weiss, WHC (H4-55)	
Tim Veneziano, WHC (B2-35)	

ADMINISTRATIVE RECORD: 100-HR-1, 100-HR-3, 10⁰DR-1; Care of Susan Wray, WHC (H4-51C)

Please inform Doug Fassett (SWEC) of deletions or additions to the distribution list.

Attachment #1

Meeting Summary and Summary of Commitments and Agreements

100-HR-1/HR-3/DR-1 Unit Managers Meeting
November 15, 1990

1. The responsible unit managers are:

	HR-1	HR-3	DR-1
DOE	J. Goodenough	K. M. Thompson	J. Goodenough
Ecology	L. Goldstein	C. Cline	L. Goldstein
EPA	D. Sherwood	D. Sherwood	D. Sherwood

2. The schedule of RI activities was distributed by Jeff Ayres (see Attachment #5).

A. Roberta Day reported on the septic tank study and pipeline assessment. Septic tank analysis won't start until spring due to lab availability. The pipeline expansion box was measured and the result is shown on Attachment #6. The pipeline will have to be cored. The camera investigation will also be postponed until spring due to the greenhouse and HEPA system need of approval.

B. The air investigations are being postponed until next year, probably to the end of the year.

3. The status of DR-1 was presented by N. M. Naiknimbalkar (see Attachment 5). The pipeline assessment is to be postponed until the HR-1 pipeline assessment is completed early next year.
4. The status of HR-3 was presented by Alan Krug (Attachment 5). A total of \$3.8 million is available for the 3 operable units. International Technology, Inc. has the data compilation files available on D-Base III. They will eventually be connected into HEIS. The contact person is Dave Meyers. Ward Staubitz (USGS) questioned whether the topographic mapping will be digitized and available through HEIS.

ACTION ITEM #HRI.28: Determine when the topographic maps will be available on HEIS, who is responsible for digitizing the maps and when they will be available. Action: Alan Krug

6. The results of the Hanford Reach Surveillance conducted by DOE in late September were discussed. A site adjacent to the D area was discovered where there is potential for an incident. The actual D operable unit stops at the riparian zone, so this falls into the HR-3 operable unit.
5. The 3 discharge pipelines from the D reactor extend across an island in the river to the main channel. Vent pipes are located at the high points of the pipelines where they cross the island. The surveillance identified 29 vent pipes. The outside of the pipelines was clean, but the inside registered up to 5,000 counts per minute. WHC recommended that the Unit Managers be notified, but that DOE consider this an

operational problem. Glen Van Sickle in Operations is looking into a response. An investigation of the soils on the island will have to be added to HR-3. There is some question as to whether these pipes were listed in DR-1. The pipes are below the high water mark, and the island may be owned by the federal government. A surface radiation survey hasn't been scheduled. It would probably take place at the same time as the rest of the operable unit. Discussion followed on public use of the island.

Action Item #HR1.29: Provide regulators with information about the situation concerning the cooling-water discharge pipelines/vent pipes on the island opposite D reactor. Action: Jim Goodenough

6. Jim Goodenough discussed the status of Action Item #HR1.25. He said DOE gave WHC the Ecology and Army Corps of Engineer's reports: "*Cost Evaluation Project: US DOE Hanford Site*" (*Ecology & EPA, issued Oct. 1990*) and "*Hanford Site Environmental Restoration Cost Analysis & Review*" (*US ACE, issued June 29, 1990*). WHC was directed to perform a root-cause analysis on the high cost estimates for RI/FS work at Hanford. The original target date was December 3, but WHC says that it will only be able to provide a status report on that date. WHC is to also validate the analysis and prepare an action plan for fixing the problem. DOE will also have an independent contractor validate WHC's cost estimating model.
7. DOE will have an independent contractor observe the FY 93 budgeting process to validate ADS activity.
8. Bob Peterson presented groundwater monitoring results for the RCRA program in the 100-H area (see Attachments 7,8,9). This relates specifically to the 183-H solar evaporation basins. The material is published as an abstract report and will be published in greater detail in either the annual report or a Westinghouse Supporting Document.

Attachment #2

Attendance List
100-HR-1/HR-3/DR-1 Unit Managers Meeting
November 15, 1990

Name	Organization\Responsibility	Phone	
Goodenough, J. D.	DOE-RL	100 HR/DR-1	509-376-7087
Thompson, Michael	DOE-RL	HR3 OU	509-376-6421
Cline, Chuck	Ecology	Unit Manager	206-438-7556
Goldstein, Larry	Ecology	Unit Manager	206-438-7018
Osweiler, Mike	Ecology	Unit Manager	206-438-7118
Lacombe, Donna	PRC	EPA Contractor	206-624-2692
Shuster, Jerry	PRC	EPA Contractor	206-624-2692
Fassett, Doug	SWEC	GSSC	509-376-9969
Fryer, Bill	SWEC	GSSC	509-376-9707
King, Joe	SWEC	GSSC	509-376-9969
Ayres, J. M.	WHC	100-HR-1	509-376-3918
Clifford, Sam	WHC	RCRA Closure	509-376-2780
Day, Roberta	WHC	100-HR-3	509-376-2499
Krug, A. D.	WHC	100-HR-3	509-376-5634
Nimbalkar, Naik	WHC	100-DR-1	509-376-8739
Patterson, J. K.	WHC	ER Program	509-376-0568
Peterson, Bob	WHC	100-HR-3	509-376-5858
Sowa, C. E.	WHC	Permitting	509-376-2780
Drost, Brian	USGS	EPA Support	206-593-6510
Staubitz, Ward	USGS	EPA Support	206-593-6510

Attachment #3

Agenda

**100-HR-1/HR-3/DR-1 Operable Unit
November 15, 1990**

- o Meeting Minutes
- o 100-HR-1 Status
- o 100-DR-1 Status
- o 100-HR-3 Status
- o Hanford Reach Surveillance
- o Groundwater Monitoring Results for 183-H
- o Action Items

Attachment #4

Commitments/Agreements Status List

100-HR-1/HR-3/DR-1 Operable Unit
November 15, 1990

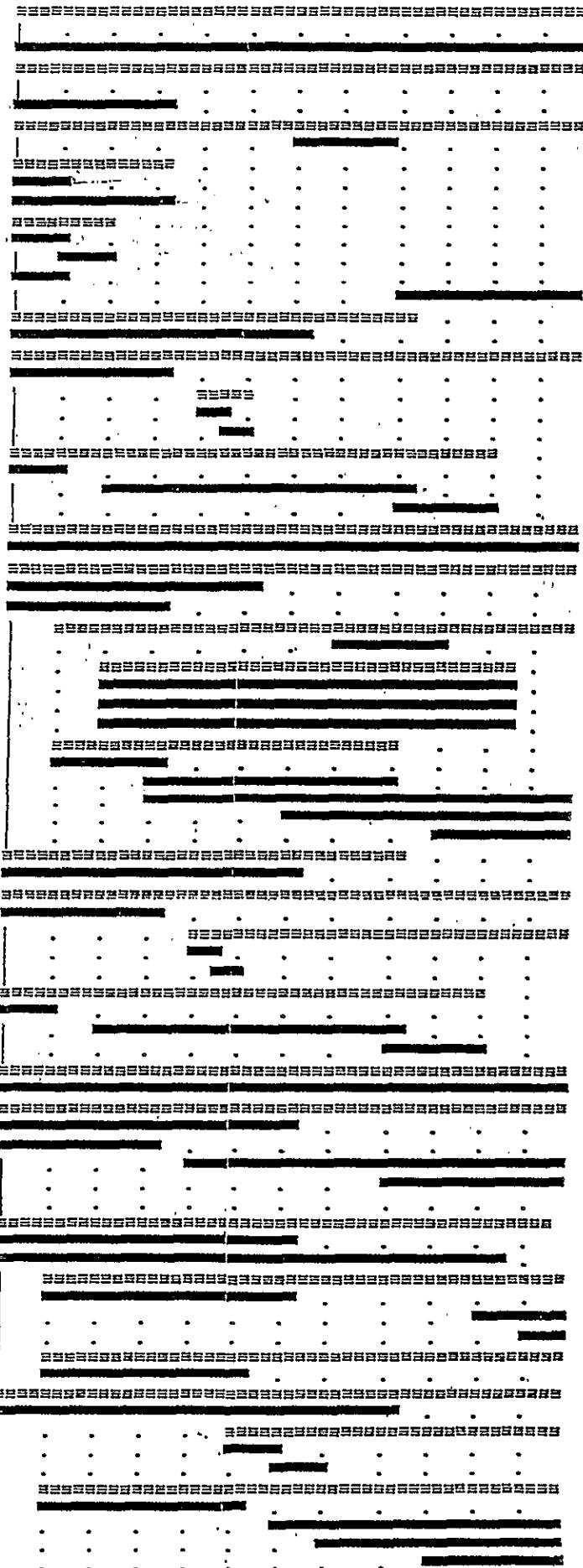
Item No.	Action	Status
HR1.21:	Delay publishing HR-1 and HR-3 until the meeting on DR-1 is held. October 15 is the target date to provide all three work plans to the public. Action: Jim Goodenough (7/18/90, HR1-UMM)	Closed DOE must address costs before the work plan can be approved. (10/17/90)
HR1.23:	Provide all three work plans to regulators by the August 31 target date or four weeks after the resolution of comments on DR-1 (hammer date). Provide copies of the work plans to the public by October 15 (critical to Ecology). Action: K.M. Thompson and J.D. Goodenough (7/18/90, HR1-UMM)	Closed See Action Item #25.
HR1.24:	Check into reviewing the QA requirements document (QARD) to be issued to EPA and Ecology. Action: J. D. Goodenough (8/16/90, HR1-UMM)	Open (10/17/90)
HR1.25:	The HR and DR work plans will be reviewed by the regulators for incorporation of their comments. Public review is on hold pending DOE-RL review of cost estimates. DOE will provide a schedule for the cost estimates by the next operable unit manager meeting. Action: Jim Goodenough (10/17/90, HR1-UMM)	Open
HR1.26	Provide a schedule to Ecology for the completion of the HR-1, HR-3 and DR-1 work plans. Action: Mike Thompson, Jim Goodenough (10/16/90, GT.UMM)	Open
HR1.27	Determine the next critical date for completing the HR-3 work plan. Action: Bob Stewart (10/16/90, GT.UMM)	Open

- HR1.28 Determine when the topographic mapping will be available on HEIS, who is responsible for digitizing the mapping, and when it will be available. Action: Alan Krug (11/15/90) Open
- HR1.29 Provide regulators with information about the situation concerning the cooling-water discharge pipeline/vent pipes on the island opposite D reactor. Action: Jim Goodenough (11/15/90) Open

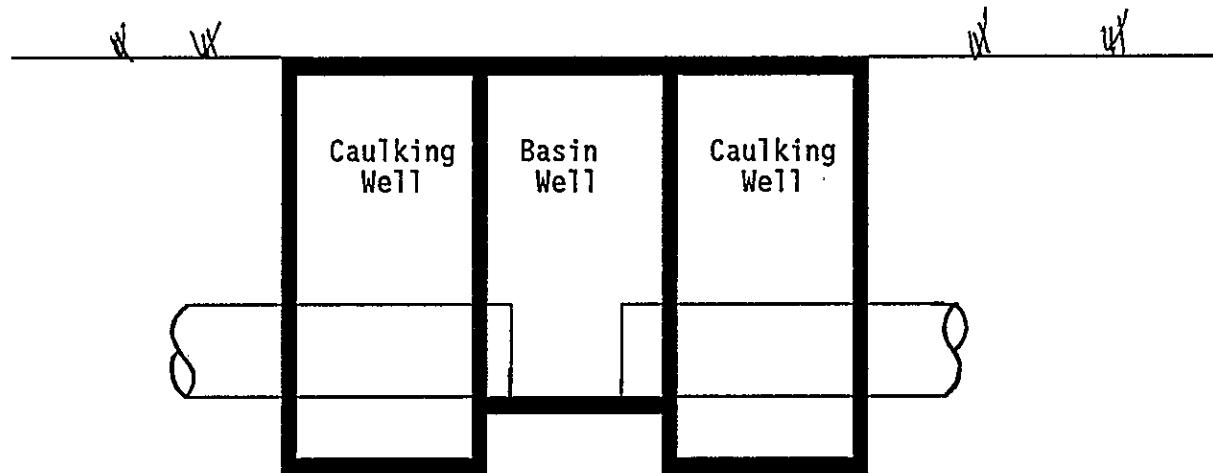
Attachment #5

Task Name

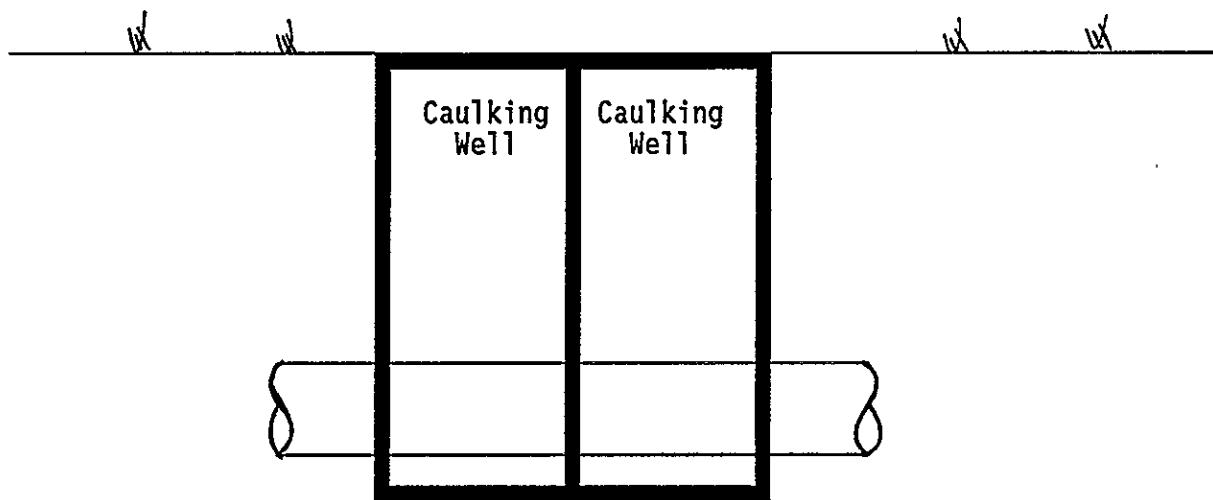
	Aux	90 1	91 Oct 1	91 Nov 1	91 Dec 3	91 Jan 2	91 Feb 1	91 Mar 1	91 Apr 1	91 May 1	91 Jun 1	91 Jul 1	91 Aug 3	91 Sep 1
100-HR-1 INVESTIGATION														
OPERABLE UNIT CHARACTERIZATION														
1. Project Management														
2. Source Investigations														
2a. Data Compilation														
2b. Topographic Map														
2c. Field Activities														
2c-1. Surface Radiation Survey														
2c-2. Septic Tank Study														
2c-2a. Septic Tank Sampling														
2c-2b. Sample Analysis														
2c-3. Pipeline Assessment														
2c-3a. Mobilization														
2c-3b. Remote Camera Inspect.														
2c-5. GPR														
2e. Data Evaluation														
3. Geological Investigations														
3a. Data Compilation														
5. Vadose Investigations														
5a. Data Compilation														
7. Air Investigations														
7a. Data Compilation														
7d. Data Evaluation														
8. Ecological Investigations														
8a. Data Compilation														
8b. Onsite Biological Survey														
8d. Data Evaluation														
100-DR-1 INVESTIGATION														
1. Project Management														
2. Source Investigations														
2a. Data Compilation														
2b. Topographic Map														
2c. Field Activities														
2c-1. Surface Radiation Survey														
2c-2. EMI/Mag Surveys														
2c-2a. Magnetometer Survey														
2c-2b. EMI Survey														
2c-3. GPR														
2c-4. Pipeline Assessment														
2c-4a. Review HR-1 Assessment														
2c-4b. Inspection of Pipelines														
2c-5. Soil Gas Survey														
2c-6. Sampling and Analysis														
2e. Data Evaluation														
3. Geological Investigations														
3a. Data Compilation														
5. Vadose Investigations														
5a. Data Compilation														
7. Air Investigations														
7a. Data Compilation														
7e. Data Evaluation														
8. Ecological Investigations														
8a. Data Compilation														
8b. Onsite Biological Survey														
8d. Data Evaluation														
100-HR-3 INVESTIGATION														
1. Project Management														
2. Source Investigations														
2a. Data Compilation														
2b. Topographic Map														
2c. Field Activities														
2d. Source OU Screening														
2e. Data Evaluation														
3. Geological Investigations														
3a. Data Compilation														
3b. Field Activities														
4. Surface Water and Sediments														
4a. Data Compilation														
4b. Field Activities														
4c. Laboratory Analysis														
5. Vadose Investigations														
5a. Data Compilation														
6. Groundwater Investigations														
6a. Data Compilation														
7. Air Investigations														
7a. Data Compilation														
7d. Data Evaluation														
8. Ecological Investigations														
8a. Data Compilation														
8b. Field Activities														
8c. Laboratory Analysis														
8d. Data Evaluation														



EXPANSION BOX DETAILS



"DRAWING" PROFILE DETAIL

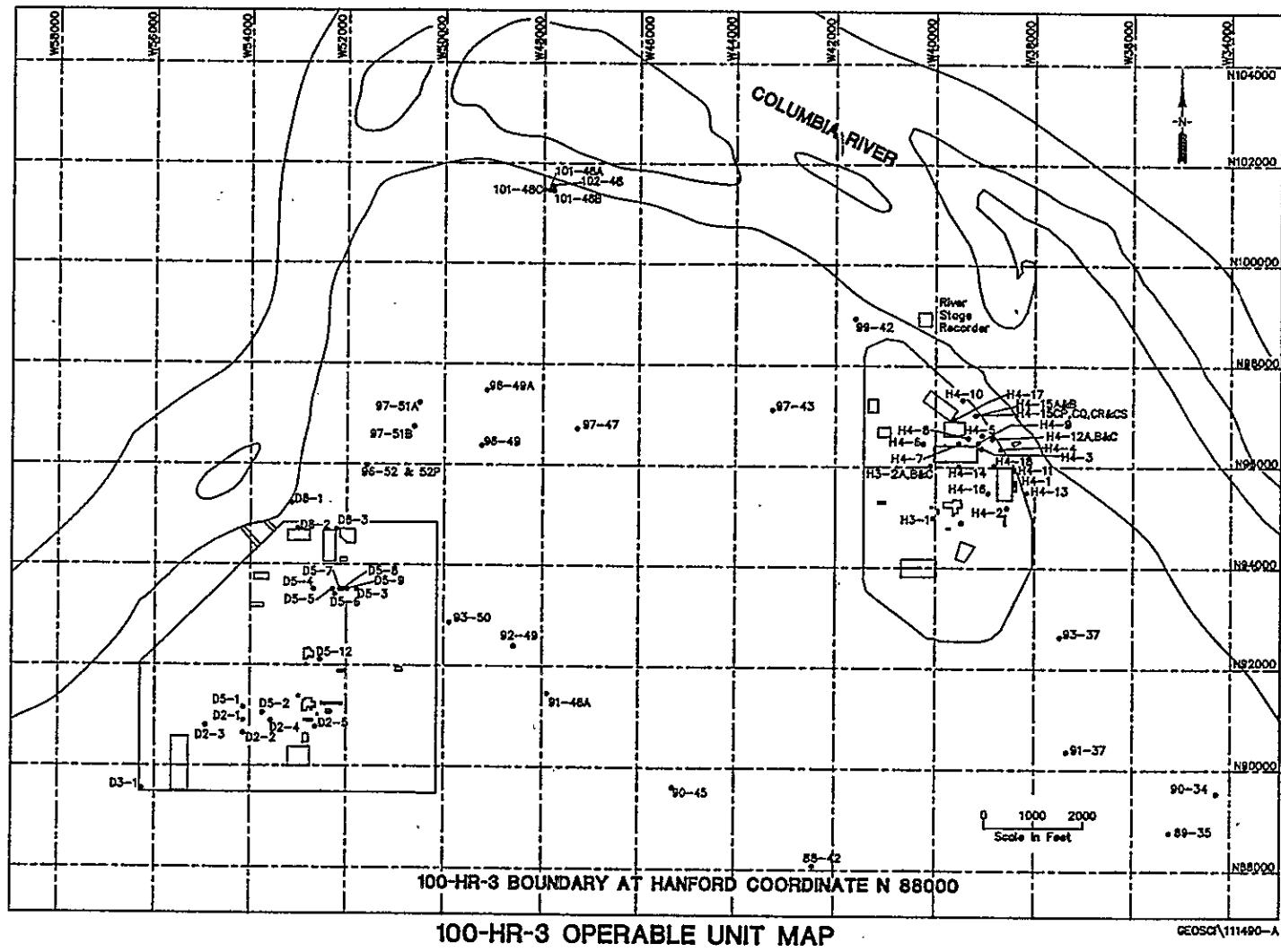


"MEASURED" PROFILE DETAIL

REO

11/15/90

9 1 2 3 4 5 6 7 8 0



Attachment #8

TABLE. Wells Within 100-HR-3 Operable Unit That Have Been Selected for Possible Use.

HR3-WEL2 (11/3/90)

WELL NO.	EW	NS	ELEV	DRL DATE	DIA	DEPTH	OPEN INT	SAMPLER	USK
1-D2-5	52638	90783	460.87	31-Aug-60	3	94	PER 36-86	P-Subarsbl	NR,CH,WL
1-D5-12	52546	92125	469.67	31-Aug-60	3	91	PER 35-90	P-Subarsbl	NR,CH,WL
1-D8-2	53018	94725	444.61	30-Jun-52	8	44	PER 30-75		NR
1-D8-3	52205	94720	449.06	30-Jun-52	6	81	PER 35-79	P-Subarsbl	NR,CH,WL
1-H3-1	40052	94994	421.48	31-Aug-60	8	75	PER 29-74	P-Hydstr	NR,CH,WL
1-H3-2A	40117	96019	417.93	30-Nov-86	6	51	PER 36-51	P-Hydstr	R,CH,WL
1-H3-2B	40105	96042	418.42	30-Nov-86	6	55	PER 50-55	P-Hydstr	R,CH,WL
1-H3-2C	40093	96019	418.22	31-Oct-86	6	110	PER 100-110	P-Hydstr	R,CH,WL
1-H4-10	39449	97349	404.44	30-Sep-86	6	38	SCR 23-38	P-Hydstr	R,CH,WL
1-H4-11	39420	95944	416.34	31-Oct-86	6	53	SCR 38-53	P-Hydstr	R,CH,WL
1-H4-12A	38854	96550	413.5	30-Nov-86	6	48	SCR 33-48	P-Hydstr	R,CH,WL
1-H4-12B	38870	96568	413.52	30-Nov-86	6	50	SCR 45-50	P-Hydstr	R,CH,WL
1-H4-12C	38845	96573	413.52	31-Oct-86	6	82	SCR 72-82	P-Hydstr	R,CH,WL
1-H4-13	38167	95506	418.2	30-Nov-86	6	52	SCR 37-52	P-Hydstr	R,CH,WL
1-H4-14	39529	96025	420.59	31-Dec-86	6	53	SCR 38-53	P-Hydstr	R,CH,WL
1-H4-15A	39197	97012	407.21	30-Nov-86	6	42	SCR 27-42	P-Hydstr	R,CH,WL
1-H4-15B	39212	97032	406.92	30-Nov-86	6	42	SCR 37-42	P-Hydstr	R,CH,WL
1-H4-16	38946	95496	424.23	30-Apr-87	6	58	SCR 43-58	P-Hydstr	R,CH,WL
1-H4-17	39608	96961	419.09	31-May-87	6	47.68	SCR 35-45	P-Hydstr	R,CH,WL
1-H4-18	38825	96037	421.82	31-May-87	6	50	SCR 40-50	P-Hydstr	R,CH,WL
1-H4-3	39080	96373	420.29	31-May-74	6	56	PER 34-55	P-Hydstr	NR,CH,WL
1-H4-4	38685	96356	413.7	30-Jun-83	6	50	PER 33-43	P-Hydstr	NR,CH,WL
1-H4-5	39065	96639	416.21	31-May-83	6		PER 32-42	P-Hydstr	NR,CH,WL
1-H4-6	40245	96473	419.58	31-May-83	6	54	SCR 39-49	P-Hydstr	NR,CH,WL
1-H4-7	39527	96479	420.59	30-Sep-86	6	53	SCR 38-53	P-Hydstr	R,CH,WL
1-H4-8	39341	96580	420	31-May-86	6	48	SCR 38-48	P-Hydstr	R,CH,WL
1-H4-9	39136	96488	418.08	30-Sep-86	6	46	SCR 36-46	P-Hydstr	R,CH,WL
6-101-48A	47884	101470	389.29	31-May-43	6	49	PER 43-47		NR
6-101-48B	47787	101450	390.15	31-May-43	6	43	PER 43-47	P-Subarsbl	NR,CH,WL
6-101-48C	47985	101480	388.59	31-May-43	6	55	PER 43-47		NR
6-89-35	35221	88767	397.46	30-Sep-61	8	64	PER 20-73	P-Subarsbl	NR,CH,WL
6-90-45	45276	89626	422.15		6	43	PER 37-42	P-Subarsbl	NR,CH,WL
6-92-49	48571	92407	432		12	55	?		NR
6-96-49	49232	96388	419.29	31-Oct-62	8	60	PER 28-96	P-Subarsbl	NR,CH,WL
6-97-43	43241	97143	421.81	31-Oct-62	8	85	PER 25-97	P-Subarsbl	NR,CH,WL
6-97-51A	50507	97238	402.49		8	37	PER 12-39	P-Subarsbl	NR,CH,WL

USK CODES:

R = RCRA PROJECT

CH = WATER CHEMISTRY DATA AVAILABLE

NR = NON-RCRA USE

WL = WATER LEVEL DATA AVAILABLE

TABLE. All Wells Listed In Hanford Wells (PNL-6907) Within the 100-HR-3 Operable Unit.

HR3-WELL (11/8/90)

WELL NO.	EW	NS	ELEV	DRL DATE	DIA	DEPTH	SAMPLER	REMARKS	DEL ?
1-D2-1	54135	90910	465.57	30-Nov-49	4	31		Casing removed	Y
1-D2-2	54135	90660	464.57	30-Nov-49	4	31		Casing removed	Y
1-D2-3	54940	90810	467.57	30-Nov-49	4	31		Casing removed	Y
1-D2-4	53565	90910	464.57	30-Nov-49	4	33		4" diam.	Y
1-D2-5	52638	90783	460.87	31-Aug-60	8	94	P-Subarsbl	NR,CH,WL	
1-D3-1	56250	89550	465.57	31-Jan-49	8	18		Casing removed	Y
1-D5-1	54135	91170	466.57	30-Nov-49	4	31		Casing removed	Y
1-D5-12	52548	92125	469.67	31-Aug-60	8	91	P-Subarsbl	NR,CH,WL	
1-D5-2	53740	91065	465.57	30-Nov-49	4	31		Casing removed	Y
1-D5-3	51790	93520	453.57	31-Mar-49	8	36		Casing removed	Y
1-D5-4	52690	93520	467.57	30-Apr-49	8	33		Casing removed	Y
1-D5-5	52290	93520	467.57	30-Apr-49	8	36		Casing removed	Y
1-D5-6	52240	93420	468.57	30-Apr-49	8	36		Casing removed	Y
1-D5-7	52140	93520	465.57	31-Mar-49	8	36		Casing removed	Y
1-D5-8	52090	93520	465.57	31-Mar-49	8	32		Casing removed	Y
1-D5-9	51990	93520	462.57	31-Mar-49	8	36		Casing removed	Y
1-D8-1	53140	95230	400	31-May-43	6			Filled in	Y
1-D8-2	53018	94725	444.61	30-Jun-52	8	44		NR	
1-D8-3	52205	94720	449.06	30-Jun-52	6	81	P-Subarsbl	NR,CH,WL	
1-H3-1	40052	94994	421.48	31-Aug-60	8	75	P-Hydstr	R,CH,WL	
1-H3-2A	40117	96019	417.83	30-Nov-86	6	51	P-Hydstr	R,CH,WL	
1-H3-2B	40105	96042	418.42	30-Nov-86	6	55	P-Hydstr	R,CH,WL	
1-H3-2C	40093	96019	418.22	31-Oct-86	6	110	P-Hydstr	R,CH,WL	
1-H4-1	38400	95700	417.75	31-Mar-52	6	38		Casing removed	Y
1-H4-10	39449	97349	404.44	30-Sep-86	6	38	P-Hydstr	R,CH,WL	
1-H4-11	38420	95944	416.34	31-Oct-86	6	53	P-Hydstr	R,CH,WL	
1-H4-12A	38854	96550	413.5	30-Nov-86	6	48	P-Hydstr	R,CH,WL	
1-H4-12B	38870	96568	413.52	30-Nov-86	6	50	P-Hydstr	R,CH,WL	
1-H4-12C	38845	96573	413.52	31-Oct-86	6	82	P-Hydstr	R,CH,WL	
1-H4-13	38167	95506	418.2	30-Nov-86	6	52	P-Hydstr	R,CH,WL	
1-H4-14	39529	36025	420.59	31-Dec-86	6	53	P-Hydstr	R,CH,WL	
1-H4-15A	39197	97012	407.21	30-Nov-86	6	42	P-Hydstr	R,CH,WL	
1-H4-15B	39212	97032	406.92	30-Nov-86	6	42	P-Hydstr	R,CH,WL	
1-H4-15CP	39186	97034	407.07	31-Oct-86	2	327		Piezometer well	Y
1-H4-15CQ	39186	97034	407.27	31-Oct-86	2	297		Piezometer well	Y
1-H4-15CR	39186	97034	407.37	31-Oct-86	2	196		Piezometer well	Y
1-H4-15CS	39186	97034	407.44	31-Oct-86	2	80		Piezometer well	Y
1-H4-16	38946	95496	424.23	30-Apr-87	6	58	P-Hydstr	R,CH,WL	
1-H4-17	39608	96961	419.09	31-May-87	6	47.68	P-Hydstr	R,CH,WL	
1-H4-18	38825	96037	421.82	31-May-87	6	50	P-Hydstr	R,CH,WL	
1-H4-2	38565	95200	421.12	31-May-52	6	311		Capped; flowing	Y
1-H4-3	39080	96373	420.29	31-May-74	6	55	P-Hydstr	R,CH,WL	
1-H4-4	38685	96356	413.7	30-Jun-83	6	50	P-Hydstr	R,CH,WL	
1-H4-5	39065	96639	416.21	31-May-83	6		P-Hydstr	R,CH,WL	
1-H4-6	40245	96473	419.58	31-May-83	6	54	P-Hydstr	R,CH,WL	

1-H4-7	33527	36479	429.53	30-Sep-86	6	53 P-Hydstr	R,CH,WL	
1-H4-8	39341	96580	420	31-May-86	6	48 P-Hydstr	R,CH,WL	
1-H4-9	39136	96488	418.08	30-Sep-86	6	46 P-Hydstr	R,CH,WL	
6-101-48A	47884	101470	389.29	31-May-43	6	49	NR	
6-101-48B	47787	101450	390.15	31-May-43	6	43 P-Subarsbl	NR,CH,WL	
6-101-48C	47985	101480	388.59	31-May-43	6	55	NR	
6-102-48	47790	101550	390	31-May-43	6	Casing removed	Y	
6-88-42	42425	88065	410.2		48	Filled in	Y	
6-89-35	35221	88767	397.46	30-Sep-61	8	64 P-Subarsbl	NR,CH,WL	
6-90-34	34273	99550	392.39		60	60" diam	Y	
6-90-45	45276	39623	422.15		6	43 P-Subarsbl	NR,CH,WL	
6-91-37	37341	90373	422.93		12	53	Corrugated liner	Y
6-91-48A	47873	91474	424.3		60	Filled in	Y	
6-92-49	48571	92407	432		12	55	NR	
6-93-37	37475	92650	399.32		72	Filled in	Y	
6-93-50	49884	92871	446		60	Filled in	Y	
6-96-49	49232	96388	419.29	31-Oct-62	8	60 P-Subarsbl	NR,CH,WL	
6-96-490	49232	96388	419.63	31-Dec-65	1.5	Removed	Y	
6-96-49P	49232	96388	419.29	30-Jun-77	1.5	89	1.5" diam	Y
6-96-52	51568	95982			12	Dug well	Y	
6-96-52P	51568	95982	412.52		1.5	36	1.5" diam	Y
6-97-43	43241	97143	421.81	31-Oct-62	8	85 P-Subarsbl	NR,CH,WL	
6-97-430	43241	97143	422.1	31-Dec-65	1.5	60	Removed	Y
6-97-43P	43241	97143	422.1	31-Aug-63	1.5	89	Removed	Y
6-97-47	47285	96735	413		48	26	Dug well	Y
6-97-51A	50507	97238	402.49		8	37 P-Subarsbl	NR,CH,WL	
6-97-51B	50605	96779	406.5		12	31	Corrugated liner	Y
6-98-49A	49125	97500	401.8		10	26	Dug well; backfil'd	Y
6-99-42	41606	98944	412.88		12	36	Dug well	Y

USE CODES:

R = RCRA PROJECT
 NR = NON-RCRA USE

CH = WATER CHEMISTRY DATA AVAILABLE
 WL = WATER LEVEL DATA AVAILABLE

SUMMARY OF GROUNDWATER MONITORING RESULTS FROM THE 100-H REACTOR AREA

Briefing prepared for CERCLA Unit Managers's Meeting, held on November 15, 1990, by R. E. Peterson, Geosciences Group, WHC -- (509) 376-5858.

- Figure 1. Water table map for the area north of Gable Mountain, December 1989 data.
- Figure 2. Outline for presentation.
- Figure 3. Index map to monitoring well locations in the 100-H Area.
- Figure 4. Nitrate ion in groundwater compared to the volume of wastes placed in the 183-H basins.
- Figure 5. Water table map for the 100-H Area, showing flow directions.
- Figure 6. Columbia River stage fluctuations during August 1990 at 100-H.
- Figure 7. Seasonal fluctuations of the Columbia River at 100-H.
- Figure 8. Water table fluctuations in monitoring wells, due to Columbia River fluctuations.
- Figure 9. Index map to cross sections drawn along and perpendicular to groundwater flow.
- Figure 10. Cross section of water table variability along flow.
- Figure 11. Groundwater velocity estimate.
- Figure 12. Nitrate concentration in groundwater throughout period of operations.
- Figure 13. Indicator parameters for 183-H waste constituents in groundwater.
- Figure 14. Nitrate plume, September 1987.
- Figure 15. Chromium plume, September 1987.
- Figure 16. Vertical distribution of nitrate in downgradient well.
- Figure 17. Comparison between nitrate in upgradient and downgradient wells.
- Figure 18. Comparison between nitrate within and outside of plume.
- Figure 19. Summary of all nitrate data for wells within plume.
- Figure 20. Nitrate data for wells within plume, showing current decreasing trend in concentration.
- Figure 21. Summary of monitoring results.

**"GROUNDWATER MONITORING RESULTS
for the
183-H SOLAR EVAPORATION BASINS"**

- **INTRODUCTION**
- **CURRENT MONITORING PROGRAM**
- **RATE AND EXTENT OF WASTE CONSTITUENT MIGRATION**

Flow Direction

Rate of Flow

Waste Constituent Plumes

- **CONCENTRATION OF WASTE CONSTITUENTS**

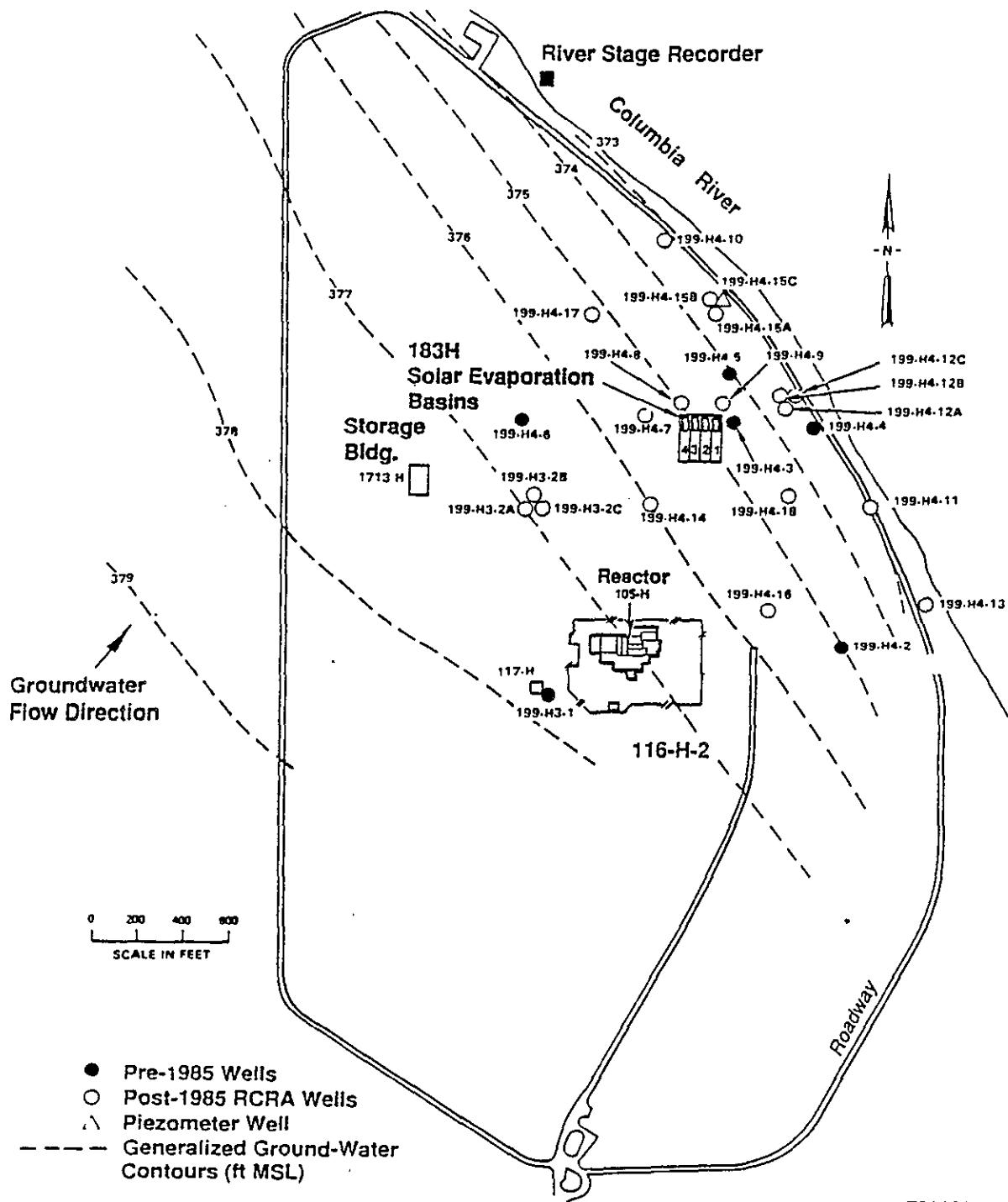
Concentration Histories

Trends

- **DISCUSSION**

Fluctuating River Stage

Remobilization

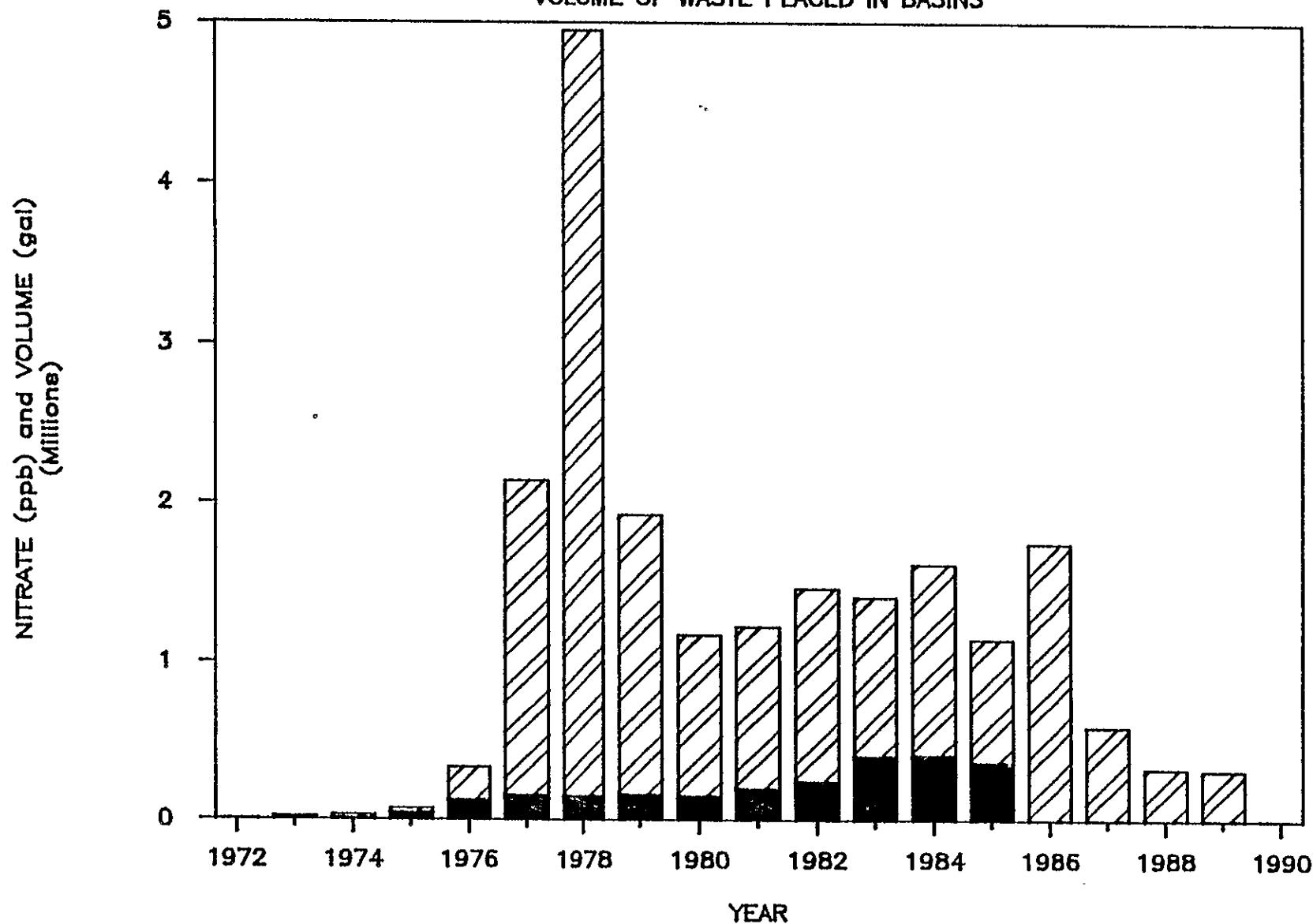


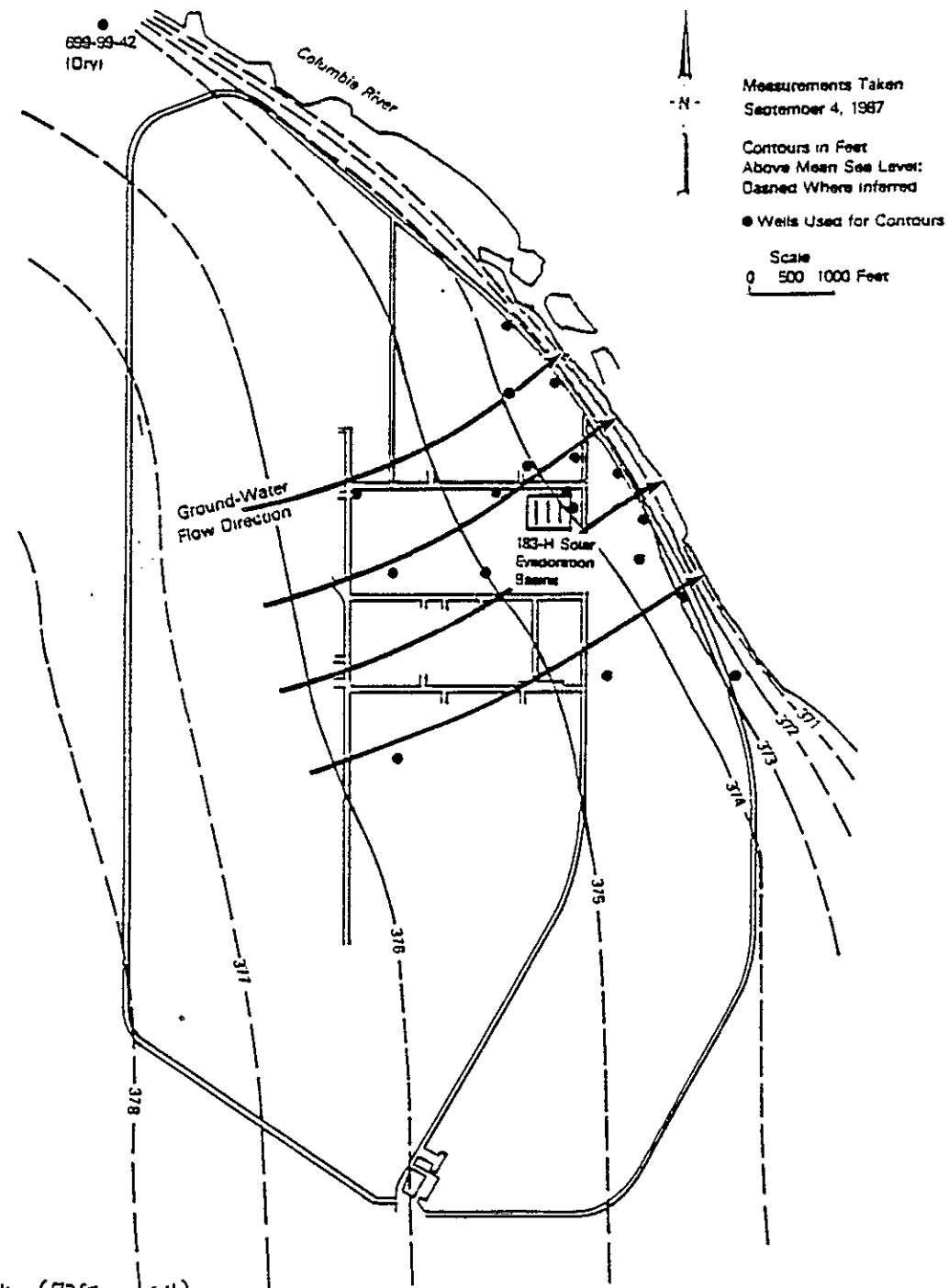
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Fig. 2. 100-H Area Map.

9 1 1 2 1 5 3 0 7 1 7

NITRATE ION IN GROUNDWATER Compared To VOLUME OF WASTE PLACED IN BASINS

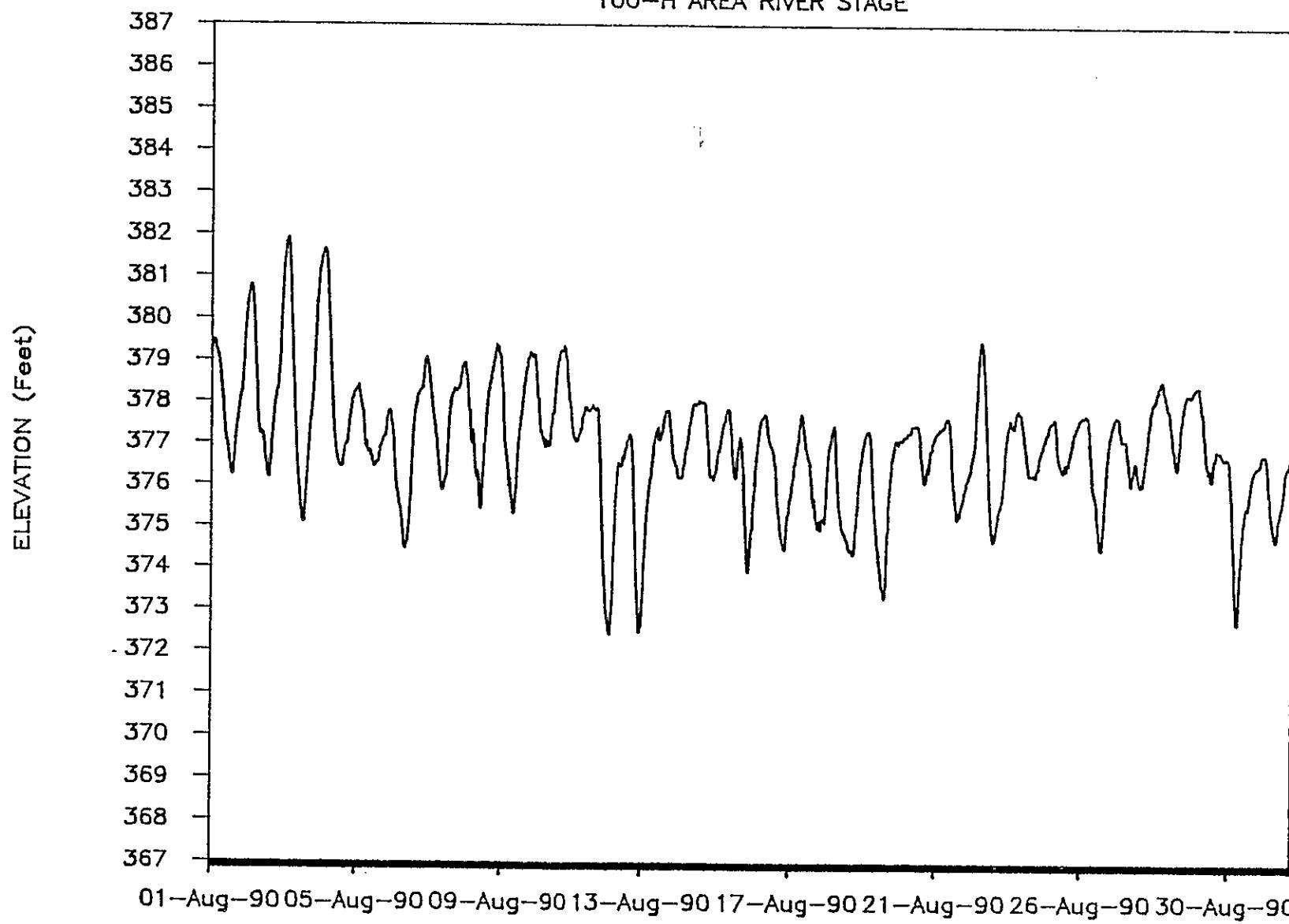




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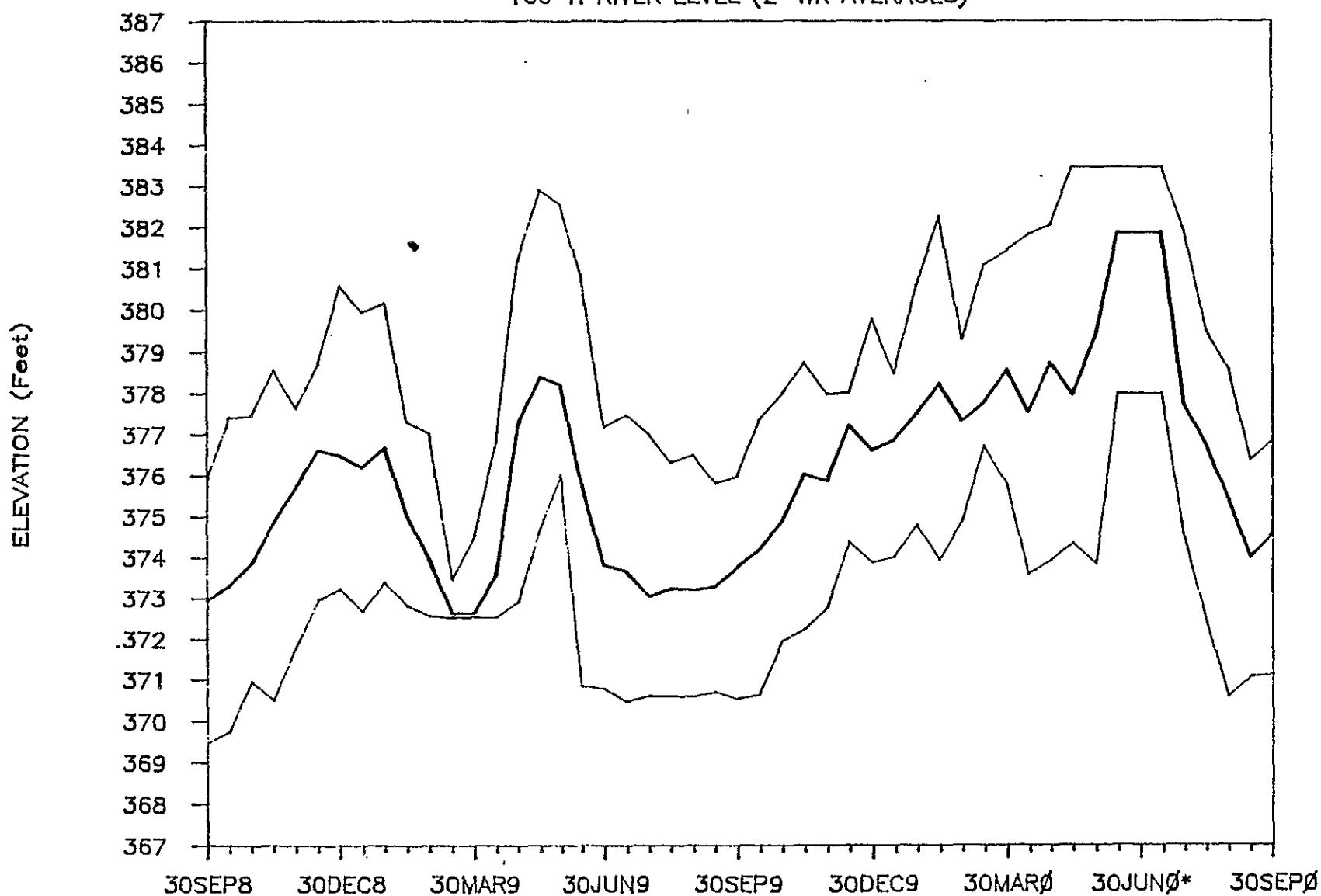
9 1 1 2 0 5 3 0 7 2 9

100-H AREA RIVER STAGE



9 1 1 2 1 5 3 0 7 1 0

100-H RIVER LEVEL (2-WK AVERAGES)

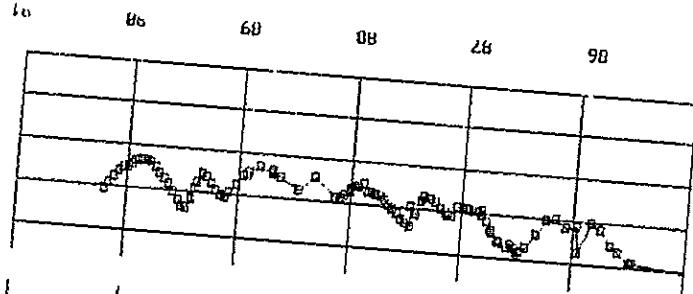


WATER TABLE ELEVATION (feet above MSL)

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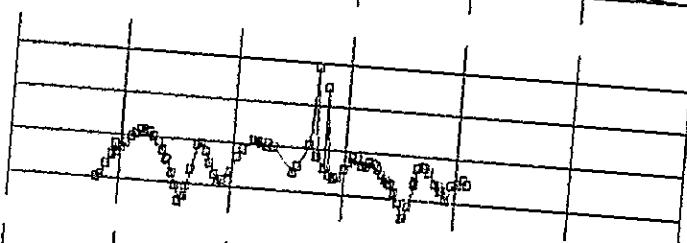
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H3-1



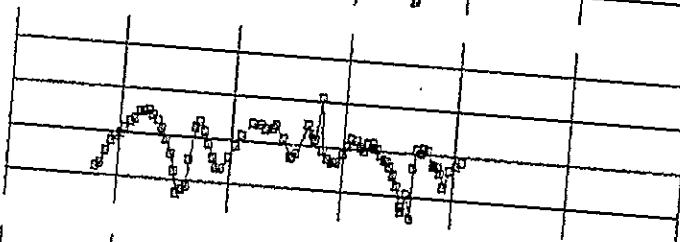
(1600)

H3-2A



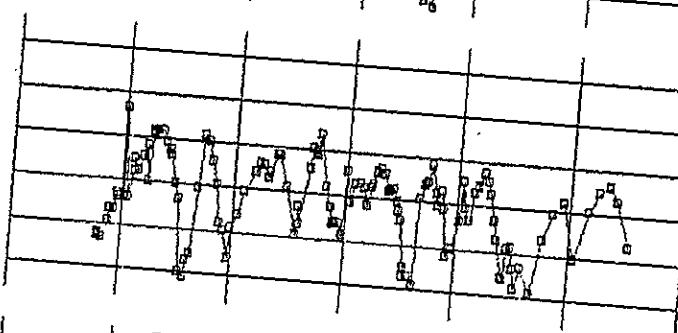
(.0011)

H4-14



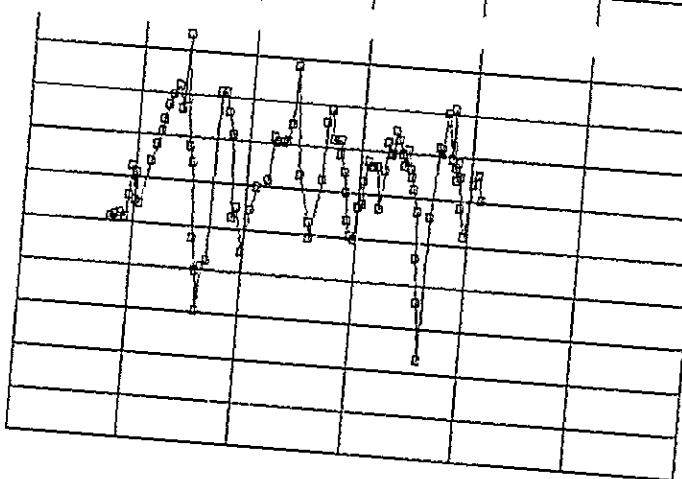
(510)

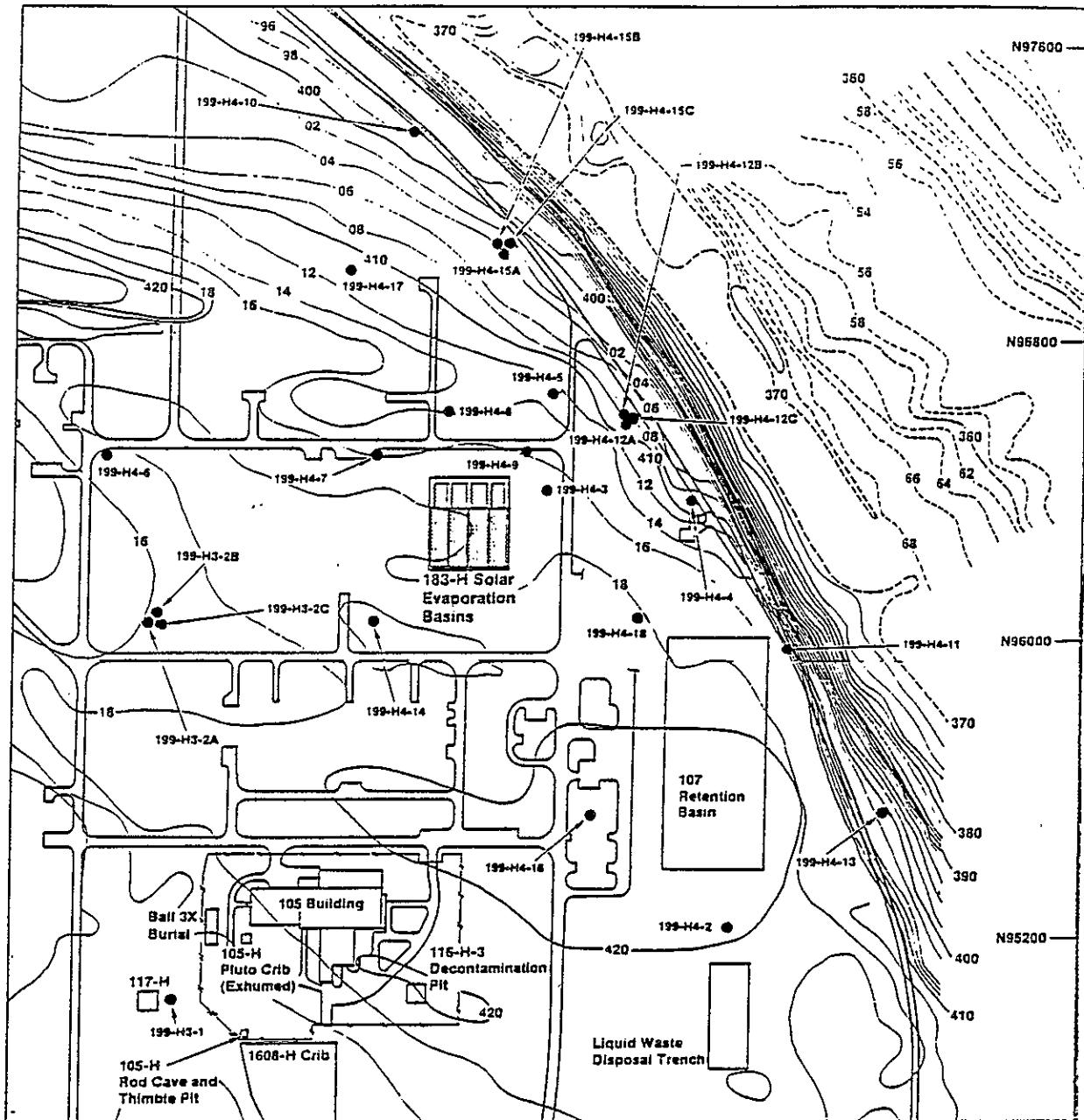
H4-3



(325)

H4-12A

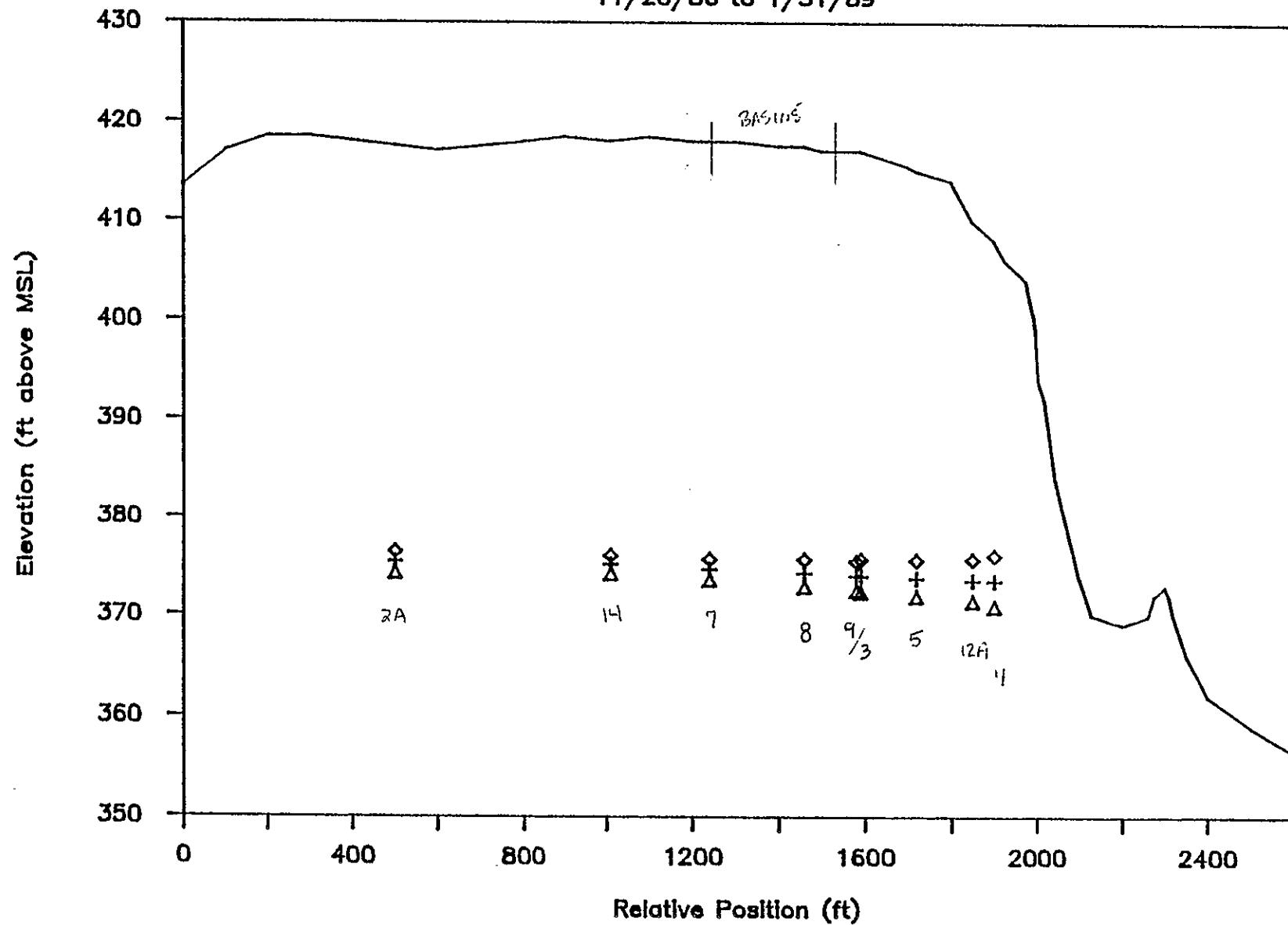




9 1 1 2 9 5 3 0 7 2 3

SW-NE WATER TABLE PROFILE, 100-H AREA

11/20/86 to 1/31/89



GROUNDWATER VELOCITY ESTIMATE

$$\text{Velocity} = (K) (1/n) (dh/dl)$$

Measured Hydraulic Conductivity (K): 50 to 460 feet/day

Typical Porosity Values (n): 0.28 to 0.39

Water Table Gradient (dh/dl at low river stage): 0.003846

- * TYPICAL VELOCITY 2.4 feet/day (0.5 to 6.32)

Other Estimates:

- * Nitrate Pulse Suggests 1.6 to 2.1 feet/day (Hall, 1989)
- * Flow Model Suggests 0.9 to 1.3 feet/day (Liikala et al. 1988)
- * Multi-Pulse Analysis (Standby!!)

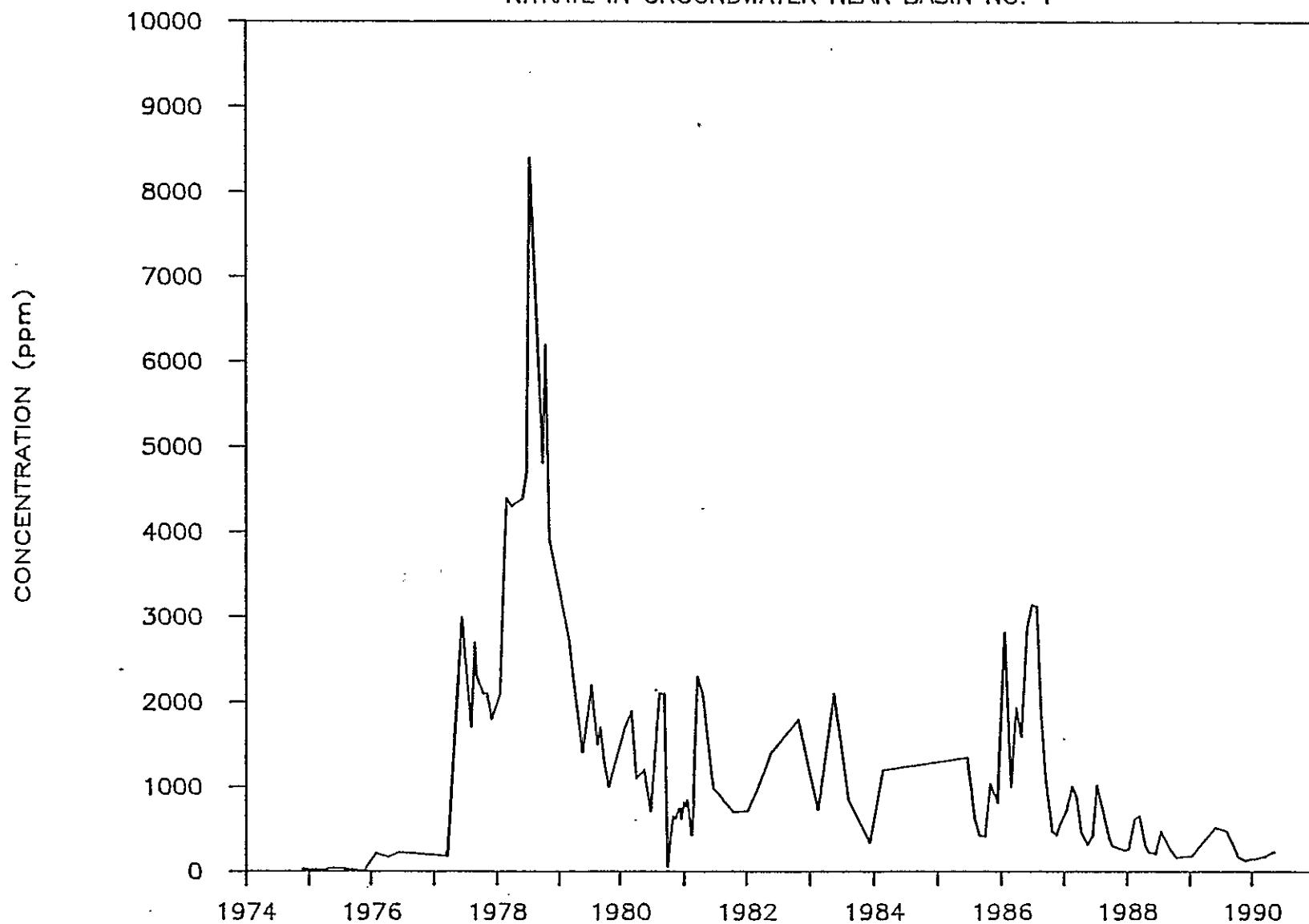
***** Bottom Line *****

- * TRAVEL TIME TO RIVER (Distance is about 600 feet)

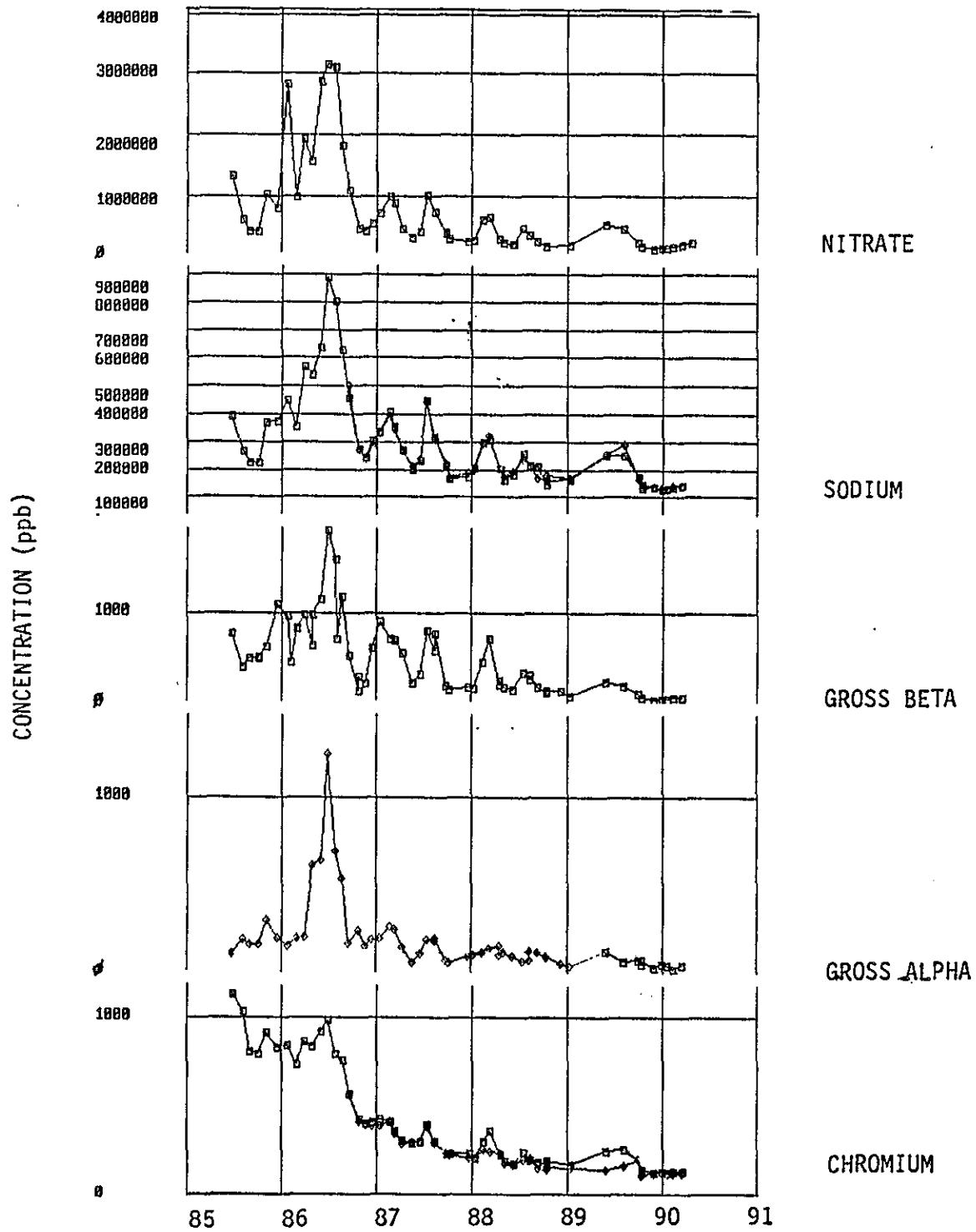
At 0.5 (ft/d)	1200 days
At 2.4 (ft/d)	250 days
At 6.3 (ft/d)	95 days

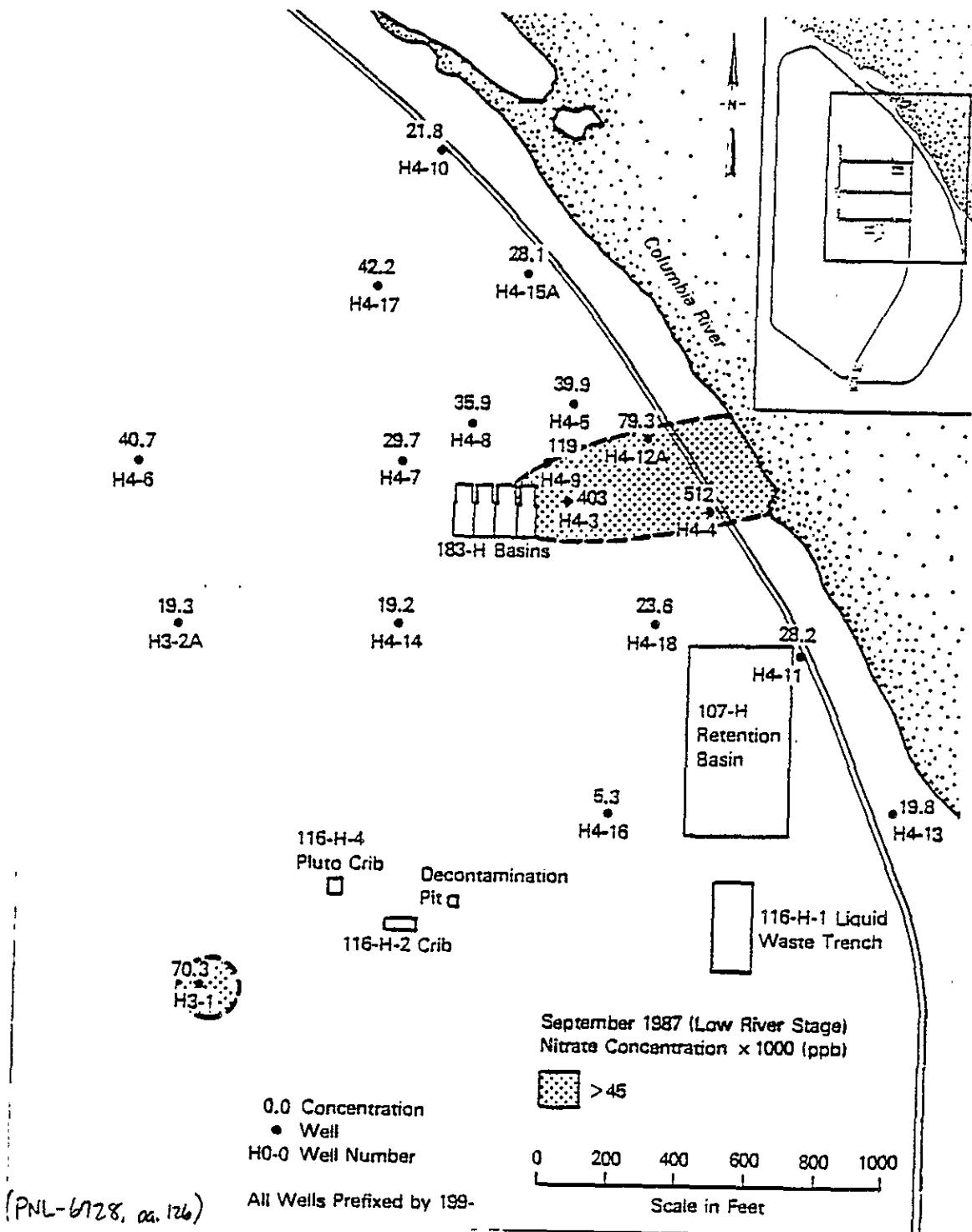
9 1 1 2 2 5 3 0 7 2 5

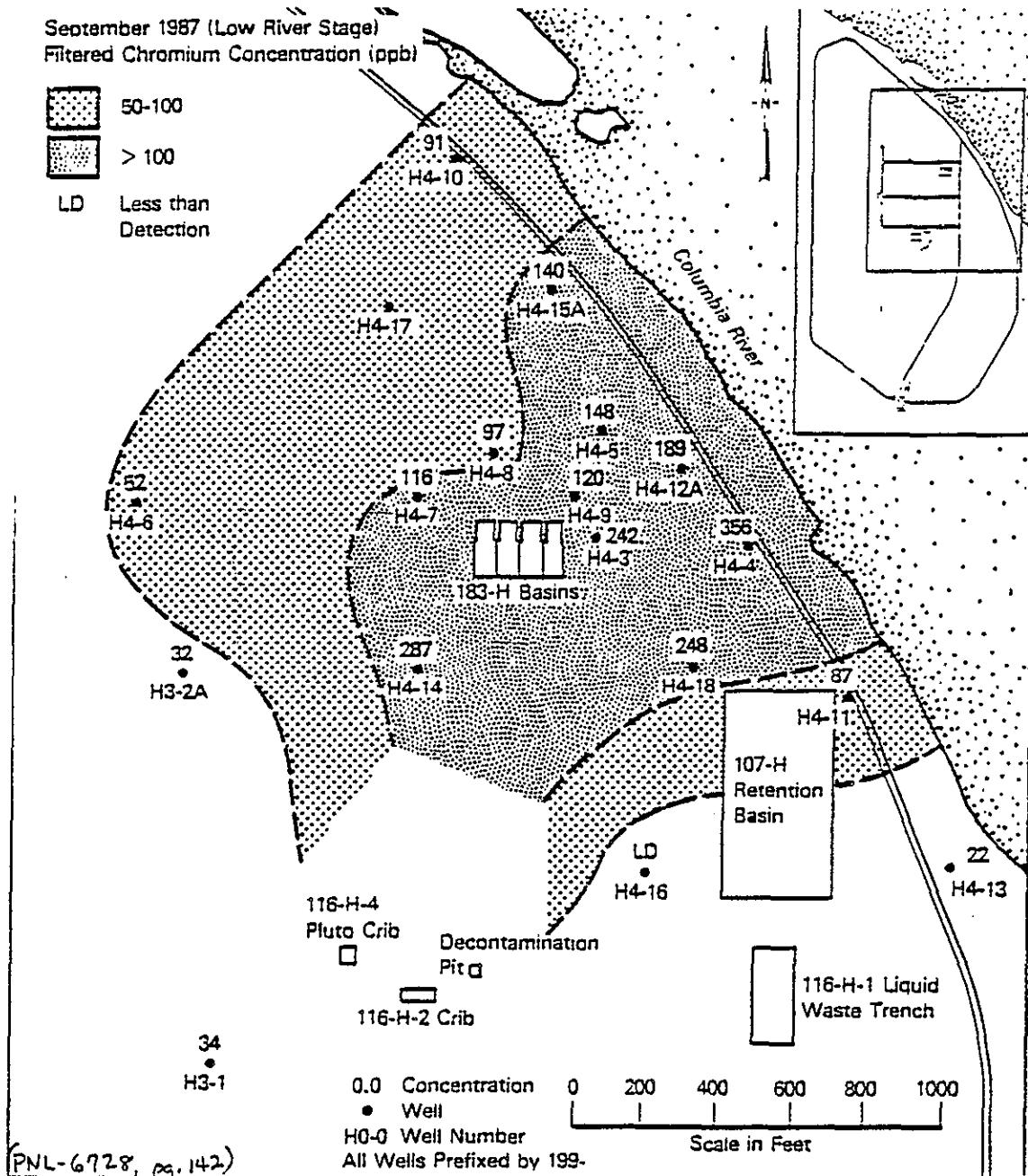
NITRATE IN GROUNDWATER NEAR BASIN NO. 1



9 1 1 2 0 5 3 0 7 2 6

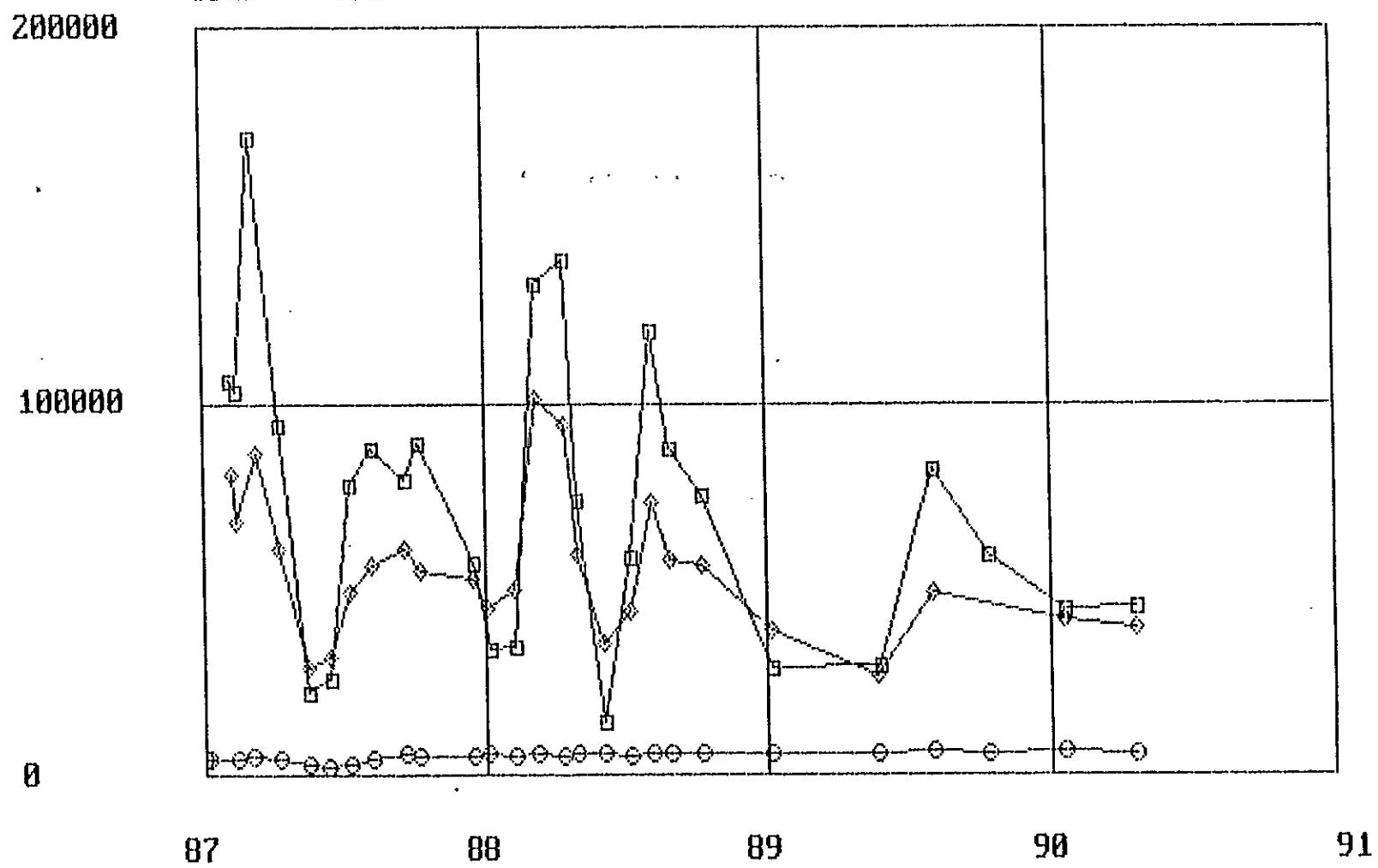






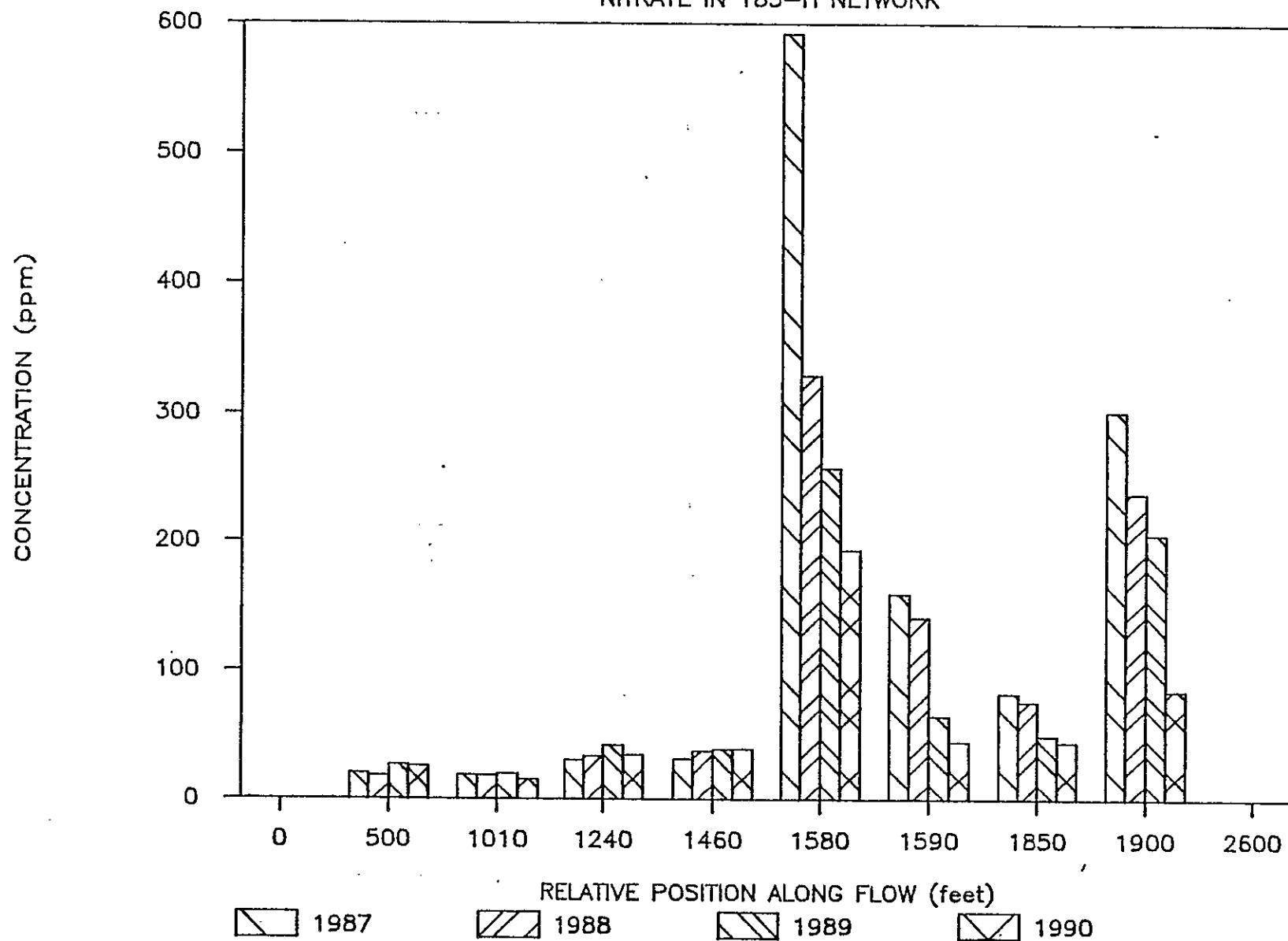
9 1 1 2 1 5 3 0 7 2 9

Well: 1-H4-12A 1-H4-12B 1-H4-12C
Code: C72 □ C72 ◇ C72 ○

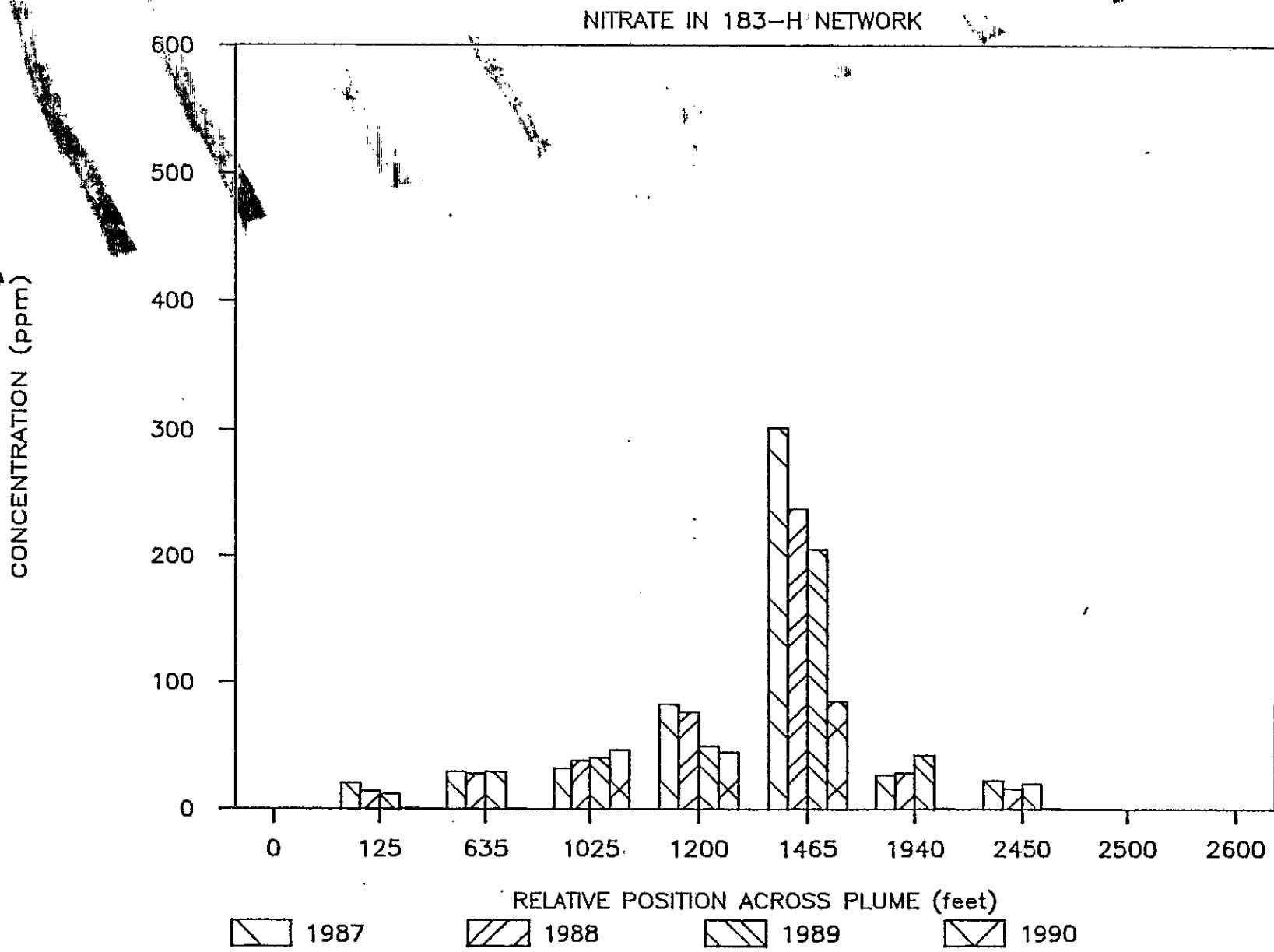


9 1 1 2 1 5 3 0 3 0 0

NITRATE IN 183-H NETWORK



9 11 2 3 5 3 0 3 1



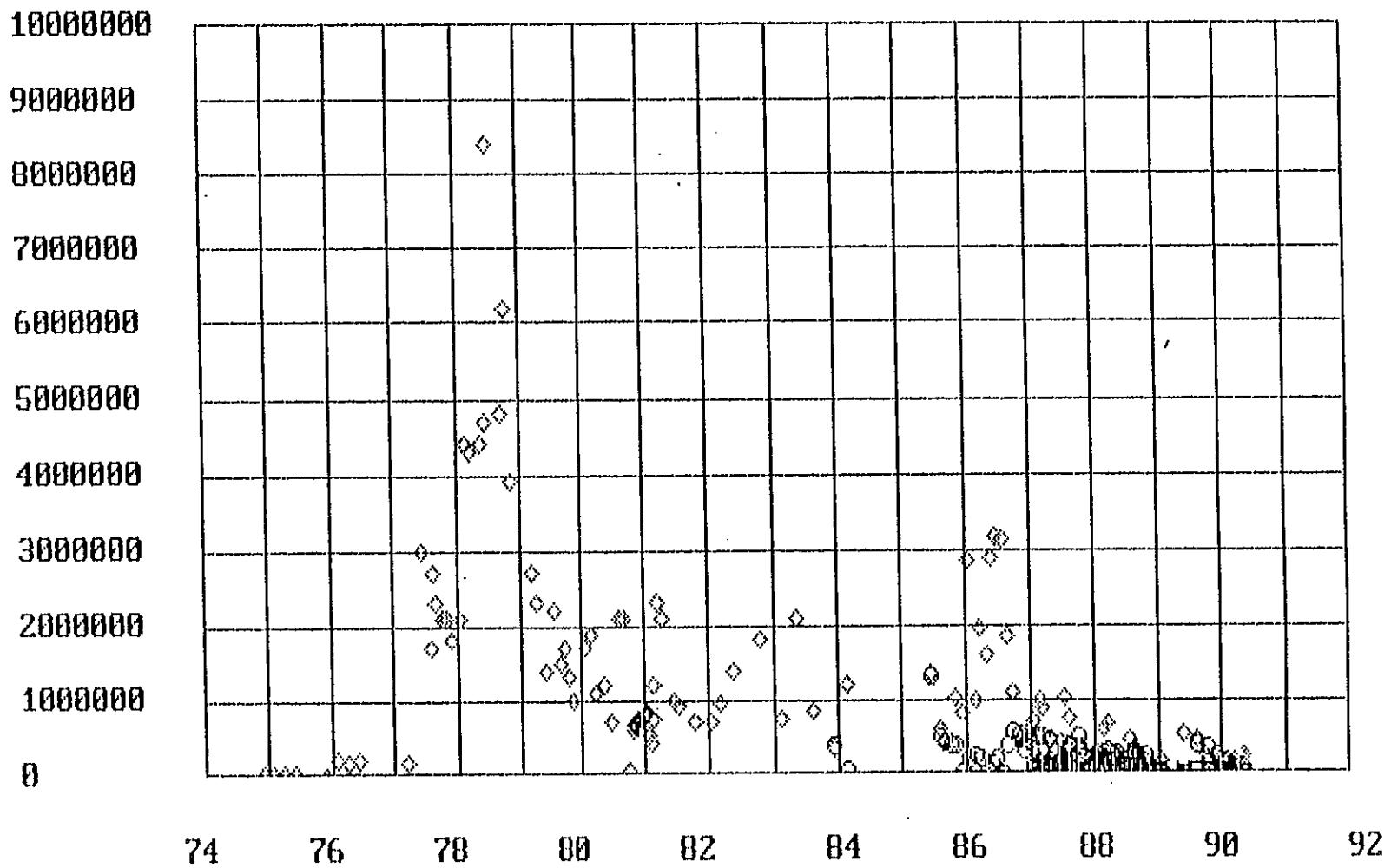
9 1 1 2 3 5 3 0 8 0 2

Well: 1-H4-12A
Code: NIT □

1-H4-3
NIT ◊

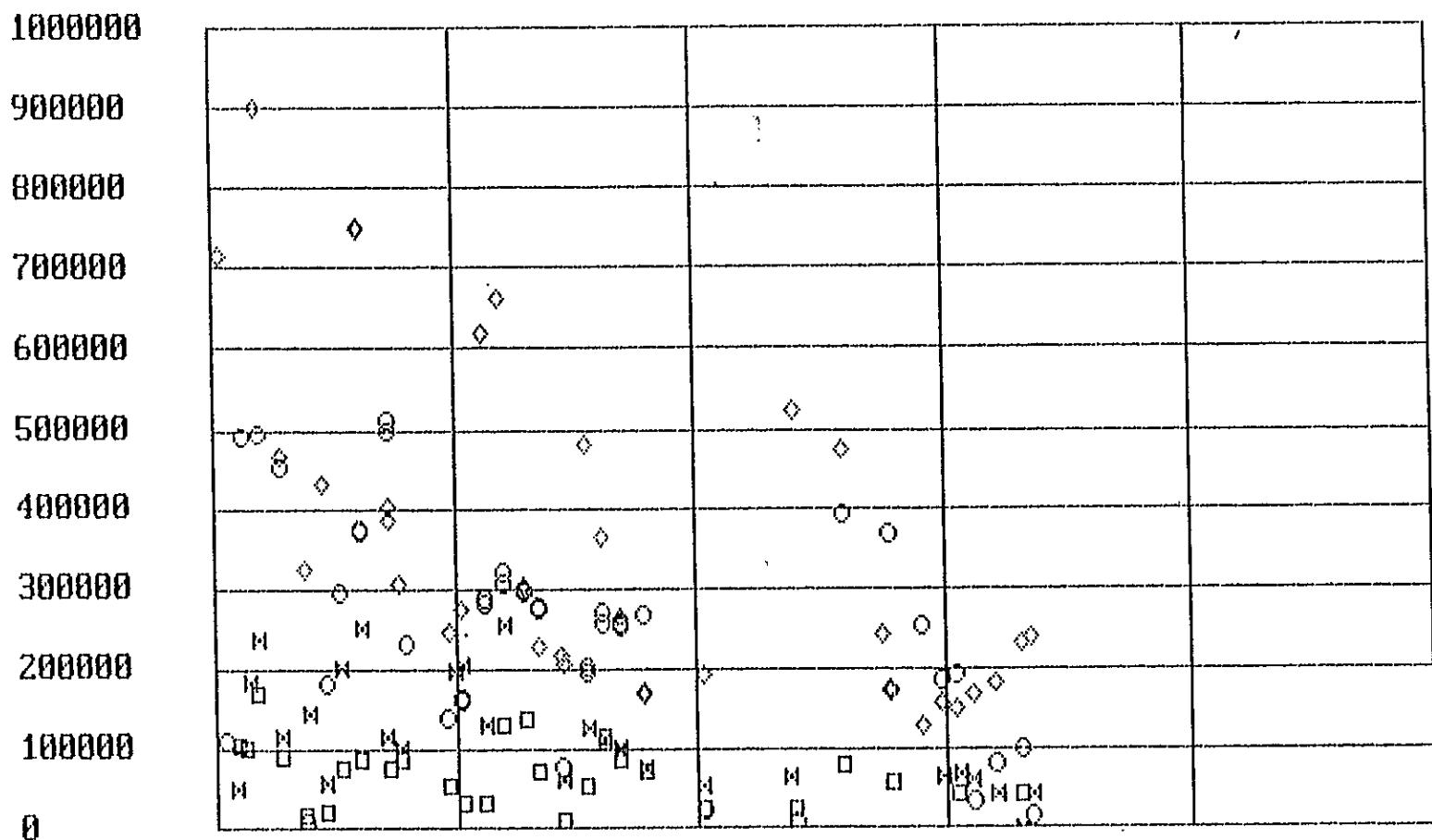
1-H4-4
NIT ○

1-H4-9
NIT △



9 1 1 2 0 5 3 0 3 9 3

Well: 1-H4-12A 1-H4-3 1-H4-4 1-H4-9
Code: NIT □ NIT ◇ NIT ○ NIT △



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SUMMARY OF MONITORING RESULTS

- OPERATION OF THE SOLAR EVAPORATION BASINS HAS RESULTED IN CONTAMINATED GROUNDWATER IN THE VICINITY OF THE BASINS
- THE DISTRIBUTION OF CONTAMINATED GROUNDWATER IS WELL-CONSTRAINED BY MONITORING WELLS
- CONTAMINATED GROUNDWATER MIGRATES TOWARDS THE COLUMBIA RIVER, WITH NO EVIDENCE OF DOWNWARD MIGRATION INTO DEEPER AQUIFERS
- DECLINING CONCENTRATIONS OF INDICATOR CONSTITUENTS SUGGEST THAT GROUNDWATER WILL ACHIEVE DRINKING WATER STANDARDS BY 1992
- THE RCRA MONITORING PROGRAM HAS CONTRIBUTED SIGNIFICANT DATA THAT APPLY TO PAST PRACTICES REMEDIATION INVESTIGATIONS